CITRUS ADVANCED TECHNOLOGY PROGRAM

QUARTERLY & FINAL PROGRESS REPORT FORM: Control of Citrus Greening, Canker & Emerging Diseases of Citrus

▶PROJECT QUARTER END December 2024 ● *Quarterly Report* ○ *Final*

Proposal Title

Determine optimal timing for application of fertilizer to improve fruit quality and reduce preharvest drop

Today's Date	Sponsoring Organization (drop-down)	Category (drop down)
01/21/2025	Citrus Research and Development Foundation	Horticultural & Management

ABSTRACT (Executive Summary-public report-do not disclose proprietary information or intellectual property)

1. Please state project objectives and what work was done this quarter to address them:
The overall goal of the project is to develop fertilization strategies to best match nutrient supply and demand, and develop recommendations for optimal nutrient application timing as compared to a simple constant supply, which will improve fruit yield, quality, and reduce fruit drop.

A)
Objective 1) ***Test if a reduced N-P-K nutrient supply in the fall is safe for sustaining HLB-affected citrus, and whether it can improve fruit quality to facilitate earlier maturity / harvesting and reduce fruit drop*:**

Fertilization was applied in the control treatment T2 in October. In the last three months, dropped fruit was counted at intervals every 15 days as scheduled. Fruit harvesting was completed in Hamlin, and yield and fruit quality were measured in November 2024. Similarly, leaf sampling and soil sampling were done after Hamlin fruit harvesting for further leaf nutrient and soil chemical analysis, which was sent to Waters Agricultural Laboratories. Fruit dropped and yield data were presented here and soil and leaf data will be reported later. Hurricane Milton caused substantial additional fruit drop in October 2024.

Fruit drop per month: The average fruit drop per plant per month from October to December was higher in Hamlin compared to Valencia. In Hamlin, the sigmoidal fertilization treatment T10 (50% additional fertilizer) resulted in the highest fruit drop at 75 fruits per tree per month. While fewer fruit drops were recorded in treatments T9 (41 fruits per plant per month) and T3 (46 fruits per tree per month). However, there was no significant difference with fertilization treatments in Hamlin perhaps due to the hurricane impacts and the wide variability of fruit health status and fruit production between the replicated blocks. In Valencia, there was a significant difference where the highest fruit drop of 28 fruits per tree per month was also observed in T10, whereas the lowest drop occurred in T4. These findings indicate that excessive fertilizer (50% additional) applied treatment led to a higher fruit drop during October to December.

Cumulative fruit drop per tree: The cumulative fruit drop per tree was higher in Hamlin than in Valencia. In Hamlin, the total fruit drop from June to December was highest in treatment T10 (165 fruits/tree), followed by T6 (160 fruits/tree), while the lowest fruit drop was observed in T9 (99 fruits/tree) and T3 (109 fruits/tree). In Valencia, the highest fruit drop was also recorded in T10 (88 fruits/tree), with minimal fruit drop observed in treatments T4, T5, and T9.

Interestingly, data illustrated that T9 consistently resulted in less cumulative fruit drop/tree until December in Hamlin and Valencia, which indicates that sigmoidal fertilization with fall fertilization in September and 25% extra in spring could minimize the fruit drop.

PI First Name Arnold
PI Last Name Schumann
Email schumaw@ufl.edu
Phone 863-956-1151

Organization CREC
Sponsor Project Number 21-024
Project Duration (years) 3 *Year of Project* 3
% Completion of Objectives (FDACS requirement) 90.00%

CITRUS RESEARCH AND DEVELOPMENT FOUNDATION, INC.